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Conceiving the Cultural Concept : Indigenous Health and Child Mortality in Rural Bolivia

Natasha Wynne Lewry Beauvais

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CONCEIVING THE CULTURAL CONCEPT
INDIGENOUS HEALTH AND CHILD MORTALITY IN RURAL BOLIVIA

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B.A., Yale University, 1993

A Thesis
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CONCEIVING THE CULTURAL CONCEPT
INDIGENOUS HEALTH AND CHILD MORTALITY IN RURAL BOLIVIA

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Introduction:

Twenty-two years ago, the declaration of the Alma Ata promoted the health of all people throughout the world with the development of primary care initiatives, economic and social growth, local, national, and international involvement. Many innovative programs have been implemented since that time, with large successes indicated by improvements in infant, child, and adult survival worldwide. Often such programs have been effective because they have targeted the highest risk populations and focused on specific interventions aimed at servicing the most people.

While these programs brought improvements to groups of people in many nations worldwide, Bolivia remains among the countries where interventions have been limited, and where corrupt national politics have created financial crises which severely impaired the government's ability to help the most marginalized communities. In addition to lack of money, lack of epidemiological data further complicates this situation because it goes undocumented. Only 5% of the world's poorest nations report cause-of-death statistics to the World Health Organization.¹ Bolivia suffers from this lack of information.

The Consejo de Salud Rural Andino (Andean Rural Health Care) has been working to improve health care, health statistics, and epidemiological tracking in Bolivia since its inception in the early 1980s. Their innovative census-based, impact-oriented (CBIO) programming, integration of local people and local goals into their project, and their unique system of regular house visits for all residents have brought about dramatic reductions in infant and child mortality in its program areas.

Despite tremendous progress, however, recent evidence has shown that improvements are not as strong in the rural high-plains areas as in the lowland

communities. Recent anthropologic studies of the cultural dynamics surrounding Aymaran health care beliefs have provided new insights into some of the barriers between western health care systems and the Aymaran people.

This paper is organized in the following way. First, the mired political backdrop which has presented such challenges to Bolivian health care programming will be presented. Then the CBIO approach to addressing these health care problems will be examined with a specific focus on its application in the rural, high-plains region of Carabuco. Next, the Aymaran culture and health beliefs will be presented and discussed as they affect the CIBO program objectives. The final section will identify some general principles important in providing integrated intercultural health care. Some potential methods of improvement will be discussed, as well as the challenges associated with this type of change, and several areas of study which need to be pursued.

BOLIVIA: General Demographics

Landlocked in the central western region of South America, (Figure 1: Map of Bolivia²)

Bolivia extends from the glacial Andean mountain range of the Cordillera Real, where icy peaks stretch more than three miles above sea level, to the hot, flat, sparsely populated south eastern lowlands where a score of rivers flow northward to Brazilian

Amazon tributaries. Only 3% of

Bolivia is considered arable.³ One quarter is pastureland supporting ruminants such as llama, alpaca, vicuna, and guanaco. The fertile regions lie mostly in the highland valleys, where wheat, maize, olives, and grapes thrive, and in the transition zone of Los Yungas, where tropical fruits such as coffee, coca, cacao, sugar and tobacco grow just above the steaming forest. Although Bolivia lies as close to the equator as Hawaii, its varied elevation and northward blowing wind patterns from Patagonia often create near arctic conditions and difficult growing conditions.

The national population in 1999 was almost eight million people, seventy percent of whom descended from Aymaran or Quechuan ancestors. Nearly four million indigenous people representing 36 different ethnic groups live in the country today.



Figure 1: Map of Bolivia with Carabuco, region of study, circled.

Twenty three percent of the total population, and all of this study population, are indigenous Aymarans.⁴ Though the country as a whole is not densely populated, the population is growing quickly with an annual growth rate of 2.0%.⁵ This rate has remained approximately stable since the 1950s, with rapid growth in urban areas and relatively slower growth, 0.09%, in rural zones.⁶ While the population is growing steadily, poverty and poor health care contribute to poor life expectancy, only 61 years. This is 15 years shorter than the average United States citizen at 76 years.⁷

A poorly developed economic base and decades of corrupt government policies have contributed to impoverished conditions throughout Bolivia. The annual per capita income is \$800.⁸ Unemployment estimates range from between 9% (official government statistics) to 24% (Catholic Church's Central Obrera Boliviana).⁹ Seventy percent of all households live in poverty with limited access to housing, education, potable water, adequate sanitation, and health care.

As in many developing countries, the differences within Bolivia between rural and urban statistics vary greatly. Fifty one percent of urban and 94% of rural homes are below the poverty level. In the highlands, 7% of homes are equipped with electricity, and 10% have access to clean drinking water. Only 17% of all homes nation wide have satisfactory access to these amenities.

Most developing countries have poor social indicators, but even when compared with other developing countries in the region, Bolivian social indicators are among the worst. They are nearly double the regional South American averages. To begin to understand how this situation evolved, it is necessary to examine the politics of the preceding decades.

Political and Economic History: The Social Impact of Bolivia's Debt Burden

"Last year in an international ranking of Most Corrupt

Governments, Bolivia slipped from number one to number two."

"How did that happen?"

"The government paid off the ranking committee."

-- Joke told by the Commander of the local army division.

After nearly two centuries of Spanish colonization, Bolivia gained its independence in 1825, and was extremely undeveloped at that time. Military governments ruled intermittently until 1952, when an alliance of mine workers and peasants successfully overthrew the regime in what became known as the Bolivian National Revolution. This blue-collar force nationalized tin mining, gave land to natives and provided universal suffrage for the first time in modern Bolivian history.¹⁰ But the institution of voting rights did not solve deeply entrenched political problems.

In the 1960s and '70s, while civil rights demonstrations and protests in the United States publicized national inequalities and raised human consciousness about the rights of all people, many basic civil liberties in Bolivia were being curtailed. In 1970, the ruthless dictatorship of President Hugo Banzer eliminated the congress and made all forms of free press illegal. The systems for debating government planning and spending ceased to exist. The Banzer administration spent money it did not have until the debt had septupled, mushrooming from \$700 million in 1971 to \$4 billion in 1981. According to one Bolivian economist, 72% of loans made to Bolivia during that time were redeposited in United States banks, often in personal accounts. Since the 1970s, this persistent debt has continued to be an enormous impediment to social change, crippling government spending for public services and leaving a narrow range of policy options available to help improve the quality of life of the poorest and most vulnerable communities. Thirty

percent of Bolivia's export income goes toward servicing the debt, leaving precious few resources to service the most needy communities.

In the 1980s, the democratically elected Hernan Siles Zuazo government tried to correct social service errors of the 70s. However, it only made financial matters worse by deciding to preserve social services and food subsidies rather than pay off any of the foreign debt. Creditors like the United States, the World Bank, the International Monetary Fund and others immediately cut credit, and the government was without a source of new loans. Suddenly broke and without a source of temporary income, the government attempted to patch up its problems by printing more money. Inflation, at 23,000%, broke the world record and the government and the people were robbed of what little buying power they still had. To better understand the predicament with which local people were faced, imagine the incapacitating experience of trying to buy a two pound bag of rice, currently worth USD \$1.50, and being charged over three hundred dollars. All finances were paralyzed.

By 1985, with the GDP on the decline for the fifth consecutive year, enormous national debt and no international credit, Bolivia faced widespread shortages that affected everyone. Social indicators such as infant mortality, already the worst in South America, continued to slip. More than one infant in 12 died every year. Sixteen percent of living children were clinically malnourished, and only 55% of the nation could read. Rampant tuberculosis, Chagas disease and malaria further weakened a population already plagued with extreme malnutrition and poor sanitation. No resources were left to invest in education or health care.^{11,12}

Paz Estenssoro's "New Economic Policy" promised to stop the downward spiraling financial situation in the late 1980s, but at extreme initial cost to the poorest Bolivians. All food and transportation subsidies ended. All social services and health care expenditures were cut completely. All federally employed doctors, teachers, nurses, civil agents, miners, and oil workers lost their jobs in preparation for privatization. National mines and factories were closed. At the expense of hundreds of thousands of jobs and services, hyperinflation was stopped, Bolivia began to earn enough money in foreign exchange to begin to pay off the debt, and the country was opened to foreign investment. By 1988, inflation had been reduced to 20% and the nation had paid \$5 billion in public debt.

Without other sources of income, many of the laid-off government employees found work in the cocaine production industry, and by 1989 nearly a third of the workforce was dependent on the production and illicit shipment of cocaine, mostly to the United States.¹³ As of 1992, 70% of the GDP was cocaine-related.¹⁴ This is a persistent source of tension between the United States and Bolivia, as the US would like to withhold lending resources until Bolivia cracks down on its narcotics production. This frequently proves to be difficult because Bolivian narcotics officials are often related to the producers, and narcotics regulations are leniently enforced. Drug trafficking officials also use the job as a training ground to later become high paid narcotics informants for the growers.

Throughout this time period, from before the 1970s until the early 1990s, there was almost a complete lack of local representation in government. Only 40 counties, all in urban centers, had provincial governments at all. With few exceptions, rural areas

went completely without representation. This posed an especially difficult problem for the rural indigenous populations who were culturally, linguistically, and politically marginalized from government participation.

These populations had no local representation at all until the end of the 20th century, in 1993, when Sanchez de Lozada's decentralization reforms built the foundations for, and created, democratically run local governments in 308 municipalities. The Law of Popular Participation, passed in 1994, mandated these government structures and insured that fully 20% of federal money be allocated to the local governments based on the regional population rather than on income generation. This gave the newly formed municipalities funding for their communities. Local governments were required to spend 85% of those funds on services such as education, health, social services, roads, micro-irrigation projects, and sports facilities, with an upper limit of 15% on administration. In theory, the local governments can advise regional and central governments regarding the use of resources for their areas.

Previously, many of these municipalities had no representation. Now they have not only a political voice, but financial resources at their disposal. This has wide ramifications for health care resources and expenditures nation-wide. As communities begin to meet more of their fundamental needs for survival, address issues of water supply, supplement their educational resources, fortify their agricultural resources, and improve roads to facilitate trade, they will be able to include health care more regularly in their realm of basic needs.

National Health Coverage:

The health care system in Bolivia is predominantly public. Before the implementation of the Seguro Basico, a plan for universal health coverage, in August of 1999, the Ministry of Health directly served 38% of the population. The Instituto Boliviano de Seguridad Social (IBSS) served another 26% of the population, including government employees and wage earners in industry, commerce, and mining. Another 10% of the population were serviced by international non-governmental organizations (NGOs), and the remaining 25-30% had no formal access to healthcare.¹⁵

This data, provided by the Center for International Health Information, may correctly estimate technical coverage rates, but it does not reveal the practical difficulty of accessing services for the majority of the service population. It is likely that the percentage of covered individuals with access to care was much lower than the number of technically “covered” lives. Overall health expenditure until the late 1990s was only 4% of the GDP – another indication that the 65% of people with government coverage did not have real access to adequate health care.

With the authorization of the Law of Popular Participation (LPP), in 1994, (described in the previous section) 20% of all federal moneys are distributed annually to local communities to pay for their health and other social services. While not all communities will chose to use this money on health care programming, it is hoped that this increased funding will gradually bring about an increase in services to those who currently have limited access.

In 1999, the state took one more step toward providing primary health services. The government voted in a program called “Seguro Basico,” which provides primary health care for all adults, in addition to maternal and child primary health needs including

growth monitoring, vaccinations, prenatal care, and acute illness treatment. While this marks a tremendous advance for the health care payment structure nationwide, there are some problems in its implementation. The primary barrier is that most rural regions lack the local infrastructure and trained personnel to deliver health services to the public.

Under the LPP communities have a source of income which may be used to create facilities, and the government is willing to reimburse international NGOs who wish to set up programs and train people in rural areas. However, building the infrastructure and finding the personnel to manage such programs will surely take time.

The payment structure for the national health system is based on a uniform fee schedule. This means that government agencies nation-wide are required to follow a national guideline, charging the same amount for the same services in every location. There is strong local influence over the implementation of such regulations, and it is probable that some of these clinics accept payment in kind – i.e., chickens for injections, eggs for antibiotics, and that others maintain a stricter definition of service payments. The goal of this type of payment structure is not necessarily to offset the actual cost of health care services, as these payments often cover very little of the total cost of care. Instead such payment systems help to foster a sense of accountability for health services and provide an opportunity for people to offer some form of compensation for services given. NGOs are often funded by outside sources and have more flexibility with such payment structures but usually adopt some combination of the national uniform fee schedule, payment in kind, and free services.

National Health Characteristics:

Before the implementation of inclusive legislation such as the Law of Popular Participation in 1994 and the Seguro Basico in 1999, Bolivia's non-representative, centralized government compounded the political corruption and financial devastation which were already leading the nation toward the worst health statistics in the hemisphere. In 1984, 71% of all health care expenditure (only 4% of the GNP) went toward urban curative services, providing help for only one fifth of the population while 80% of the nation lived in rural areas, often without any services.¹⁶ Preventive services were practically non-existent, even in urban zones.

For all rural and most urban areas, health data reporting has suffered from gross under-registration of births, deaths, causes of death, and incidence of communicable diseases. No national system exists for registering cause of death, and where registration does occur, only 20% of deaths have been physician certified, and cause of death is likely to be inaccurate. The available national data is somewhat biased because it comes from areas where some type of surveillance exists, and where health awareness and access to care is likely to be greater than in an average community.¹⁷

Given that national health statistics suffer from under-reporting, it is even more startling that in 1960 the infant mortality rate (IMR) nationwide was 252* – one in four Bolivian babies died before reaching their first birthday.¹⁸ During the first half of the 1980s, the Bolivian IMR was 109, as compared with rates of 64 and 48 in Brazil and Columbia, respectively, and as low as 17 in Cuba during the same time period.¹⁹

* Infant Mortality Rate is defined as the number of children who die before their first birthday per 1,000 live births.

While drastic improvement occurred over the next several decades, resulting in an IMR of between 75 and 102 in 1996,²⁰ that figure is still more than double the regional average in South America, and at least eleven times greater than the United States estimate of 6.3 last year. As of 1998, more than 8% of Bolivia's children would die before the age of five.²¹ Adults die at a more rapid rate as well, the life expectancy is only 61 years,²² 15 years shorter than the United States average of 76.²³

Goiter, cretinism, malnutrition, Vitamin A deficiency, and infectious diseases such as respiratory infection, tuberculosis, diarrhea, yellow fever, and malaria are enormous problems endemic to Bolivia. While cause of death is often not well documented, national data indicates that the majority of children die from respiratory infection, diarrheal disease, dehydration, and illness associated with malnutrition. "Old age" is far and away the most common cause of adult death, followed by a large second tier consisting of accidents, intoxication, respiratory infection and gastrointestinal disorders.

An uneven distribution of services exists between the urban and rural sectors, therefore, it is important to view health statistics of different regions separately. For example, while the national IMR in Bolivia in 1996 was 75, the rural and urban rates were 94 and 58, respectively. Urban women have an average of four children each, while rural women have an average of six. This rural/urban dichotomy must be evaluated with an understanding of differences in access to social services. Sixty-three percent of urban people have access to safe drinking water compared with only 32% of rural people. In the high plains, where this research took place, and some other rural zones, only 10% have clean drinking water. The same gap exists with sanitation services: only 58% of

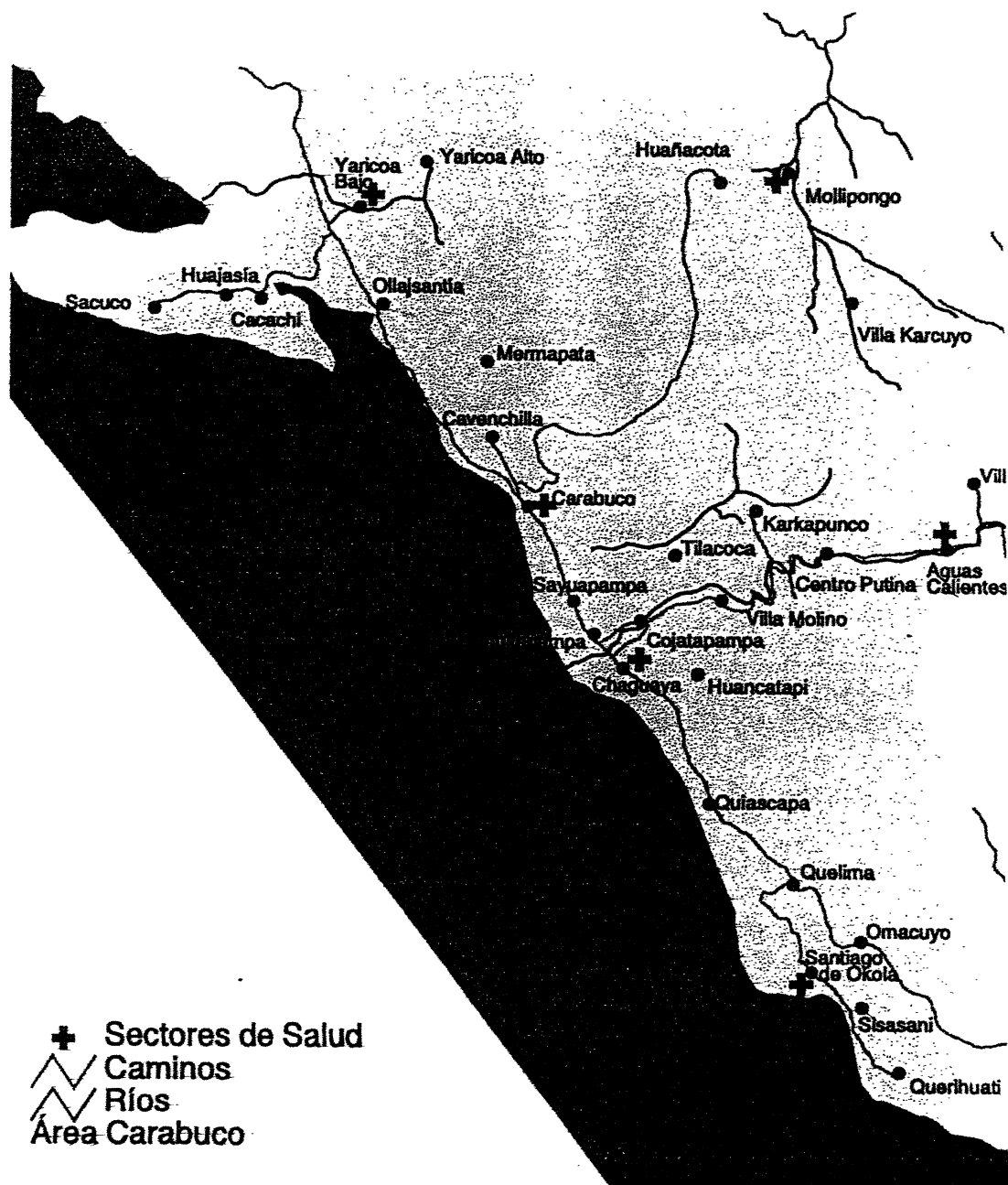
urban families and 16% of rural homes have access.²⁴ Each of these social indicators has been shown by past studies to be a predictor of infant mortality. Thus, there is a correlation between rural health services and higher rural infant mortality.

Literacy has also been shown to be a strong predictor of infant mortality; rates are 50% percent lower for mothers with a medium level of education compared to those with little or no education.²⁵ Although the national adult literacy rate is reported to be 83%²⁶, more than one half of all rural women are illiterate.²⁷ Chronic malnutrition (growth stunting) is also a problem. Forty-six percent of all Bolivian children whose moms have low education, and 15% of all other children, suffer from malnutrition, placing them at higher risk for morbidity and mortality from other causes as well.

As demonstrated here, Bolivian health care as a whole is in crisis, with a disproportionate burden of morbidity and mortality falling on the rural population. The remainder of this paper will look at one specific rural community northwest of La Paz, and the benefits and struggles of the health care program implemented there.

The Region: Carabuco and its People
 Figure 2: Carabuco Area Map²⁸

Area Carabuco



0 1 2 3 4 5 Kilometers

One-hundred sixty kilometers northwest of the Bolivian capital city of La Paz Carabuco is nestled at an elevation of 13,000 feet, between the Andean Mountains and the shores of the enormous Lake Titicaca, in a region called the “altiplano,” or high plains (figure 2, preceding page and figure 3²⁹). The area consists of 27 different indigenous Aymaran communities, home to

Figure 3: Map of Bolivia (Carabuco in the West)



over 6,000 people. Paved roads connect the bigger villages to one another and to the nation’s capital, smaller villages are joined by footpaths and are accessible only by foot.

Modern historians are not sure of the origins or migration of the Aymaran people in Carabuco. In fact, the Aymaran culture itself maintains no migratory legends. They believe that the Supreme God, Viracocha, created them from the shores of Lake Titicaca at the time of the creation of the Sun.³⁰ Their system of beliefs and spiritual understanding stands as the foundation for their entire culture, which will be discussed in greater depth in the “Aymaran Culture” section.

Aymaran livelihood is based on subsistence level agriculture, primarily potatoes, quinoa and other hearty grains which grow in the arid highlands of the altiplano. Farm work is accomplished by hand or with the help of mules. Some families maintain llama

herds and have limited numbers of other domestic livestock. Families residing near the lake fish for a living. Nearly all gathering and processing of products is accomplished by hand. Public buses and rough shipping trucks are the only motorized vehicles which pass through the villages.

The climate at this high altitude produces harsh temperature changes from day to night, reaching the 60s by day and leaving sheets of ice around the lake by morning. It is said that the local Aymaran people living in mud and straw huts have adapted physiologically to the harsh

temperature changes by

developing an increased number

of capillaries in their feet and

hands to keep from freezing.

Indeed, it appears that way to

foreign visitors who require

multiple layers of high tech gear



Figure 4: Aymaran mountaineering guide in common footwear with North American hiker.

to endure the same climate that the Aymarans survive in sandals (Figure 4).³¹

Lack of modern infrastructure limits accessibility to the communities, and makes it difficult for locals to travel to the larger commercial areas to trade or to work. The main road from La Paz to the center of Carabuco was only paved in the spring of 1999, and access to all local villages within Carabuco remains limited. Family income averages between \$200 and \$300 annually. Illiteracy, like an epidemic, affects 46% of adults,³² and functional illiteracy (having less than third grade reading level) affects over 55%.³³

Only 12% of the people have access to clean drinking water, and sanitation services exist for only about 6%.³⁴ Electricity reaches only 20% of rural highland villages.

For at least as long as there has been documentation, since the early 1980's when the current health development organization came to Carabuco, there has been migration out of the altiplano. People leave by the hundreds yearly in search of better access to education and livelihood in urban areas (see figure 5³⁵). This migration is so marked that in 15 years, the local population dwindled from 12,800 to 6,500 – a nearly 50% decline. Most, 75%, search for work in El Alto, an urban suburb of La Paz about three hours southeast of Carabuco by bus. A smaller percentage, 2-3%, move to the fertile region of Los Yungas to farm.³⁶

Figure 5: Population Decline in Carabuco

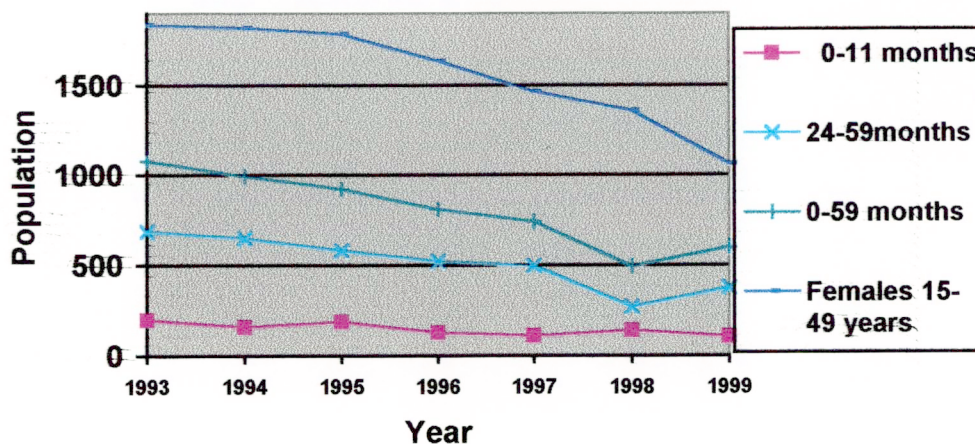


Table 1: Population of Carabuco³⁷

YEAR	Total population (all ages)	0-11 months old	2-23 months old	24-59 months old	5-9 years old	Females 15-49 years old
1999	6567	103	121	372	788	1060
1998	6844	136	88	265	892	1352
1997	7508	105	140	493	937	1460
1996	8092	126	162	519	1043	1630
1995	8573	185	157	579	1080	1779
1994	8986	155	190	647	1143	1814
1993	9034	197	193	687	1152	1831
1985	12800					

On the whole, young adults and their young children make up the largest group of people who are leaving the region. This accounts for Carabuco's skewed population graph below (Fig. 7) in comparison with the national pyramid (Fig. 6).

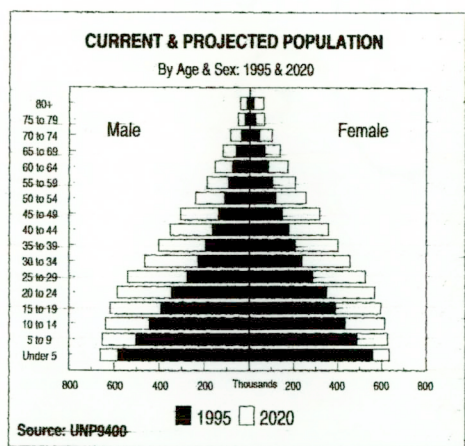


Figure 6:
Bolivian National Population Pyramid
Jan 1998³⁸

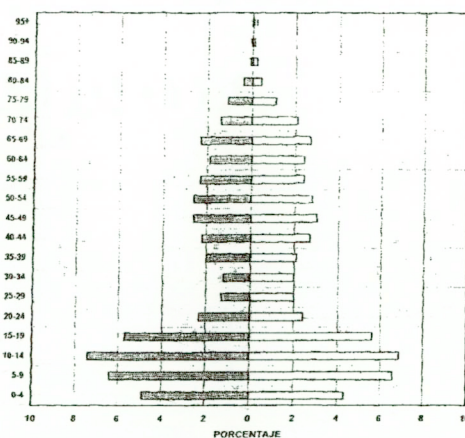


Figure 7:
Population Carabuco, (males left,
females right.)³⁹

Unlike the national population pyramid, Carabuco's population graph looks more like an hourglass, and has maintained this shape at least five years. There are many 5-15 year olds, few 25-35 year olds, and fewer men than women remaining in that 25-35 year old age group. Men often leave to find work in the city, while women remain at home to maintain the fields and raise children. Young women also leave for the city, bringing their youngest children with them. The net migration of women of childbearing age (15-49) in 1995-96 was 1.5%, which increased to 3.7% in 1997-98.⁴⁰ In keeping with this migration, there was a sharp reduction in the number of women of childbearing age over the seven-year period from 1993, when there were 1,831 women, compared 1999, when there were only 1,060. This represents a reduction of 42%. In six years, this steady migration of young families and fertile women in particular creates an interesting dynamic within the fertility and birthrate statistics for Carabuco.

The average Bolivian woman has five live births during her lifetime. The rural average is six children per woman. The few women remaining in Carabuco average nine children apiece. Under normal circumstances, such a high number of births per woman would lead to a rapid growth rate, but the actual number of women present is so small that the birth rate per 1,000 residents is 18, just over half the national average of 34.⁴¹ This relatively small birth rate is reflected in the growth rate of the community which is one-third the national average.⁴² Population statistics also reveal a predominance of residents over 50 years of age, but an examination of the pyramid indicates that this high percentage most likely reflects the lack of young families and children in the denominator rather than a large absolute number in the numerator.

Previous research has suggested that the way to stave off the rapid decrease in population in the Carabuco area would be to improve the number of infants who survive childhood. This could be done by educating parents about symptoms and risk factors for dangerous disease, developing better vigilance systems for diarrheal diseases and respiratory infections, and by taking better advantage of the home visit system which is already in place in Carabuco.⁴³ One can support such approaches without argument; they address some of the most important health care issues and solutions at hand on the altiplano today. But this cannot be accomplished without examining the reasons why so many families with young children feel compelled to leave the area.

Almost all migrating campesinos leave in search of work or better living conditions for their families or a better climate for growing crops. The poverty which people flee contributes not only to the child mortality rate, but also to poor access to services. Some of the improvements in infrastructure, such as better roads and schools, may help to provide resources locally so that people will not have to leave to improve their quality of life. However, it is also possible that increased access to resources and transportation will provide greater access to areas which already offer more developed infrastructure, better education, and more opportunities for employment. With such a disparity in the distribution of resources between urban and rural areas, many people have moved out of the most rural environments already.

While health care programs alone can not repair the problems causing the out-migration, they can offer supplemental support to communities in need. They can also integrate their work with community members as questions of development sustainability are asked from within the community itself. Improving health care and access to care in

Carabuco will not solve all of the problems contributing to poor health or to poor living conditions. But community based health care models can do more than improve the health and survival statistics of a region. They can serve as a model for interface between resource groups and local communities, and can begin to help bridge gaps of understanding between mainstream mestizo culture in Bolivia and the indigenous culture. The model used by the Consejo de Salud Rural Andino is an integrated one, relying on community employees and multiple re-evaluation of its programs to ensure that it meets community needs. In the next section, we will look at the unique structure of this program and some of its successes and then examine some of its strengths and weaknesses.

The Health Development Organization: Consejo de Salud Rural Andino/ Andean Rural Health Care and the Census Based Impact Oriented (CBIO) Approach

In the 22 years since the declaration of Alma Ata – primary health care for all by the year 2000 – countless approaches to improving health conditions have been implemented across nations. While health statistics have improved across the globe since then, certain subsets of people still carry the major burden of poverty and the poor health associated with being financially disadvantaged. In urban Bangladesh, for example, where the overall infant mortality rate was 87 in 1993, babies were dying at more than double that rate in certain slum populations.⁴⁴ In China, over one third of all deaths occur in the 12% of the population which lives in the most remote areas or who come from ethnic minority groups.⁴⁵ In Punjab, India, 62% of all child mortality is found among 13% of mothers who suffered multiple child deaths.⁴⁶

This dynamic exists for adults as well as children in Bolivia, where rural residents have endured poorer living and health care conditions than their urban counterparts. The national “total mortality” rate in 1986, for example, was 147 per thousand overall, with region specific data at 110 in urban areas and 67% higher, at 184, in rural areas.⁴⁷ The rural infant death rate was also over 50% higher during a sample period of 5 years.⁴⁸

In the 1980s, Dr. Henry Perry, a United States trained physician who had raised his family on the altiplano, began implementing a health care approach designed to reach out to those who were most marginalized. He established two sister organizations to join forces in this venture, Andean Rural Health Care, based in North Carolina, and its Bolivian counterpart, the Consejo de Salud Rural Andino (ARHC/CSRA). The North Carolina office is staffed primarily by non-latino from the United States who have had

extensive experience living and working in Bolivia. Several have raised their families in Bolivia. The director of the whole agency, ARHC/CSRA is Nathan Robinson, a US national who was raised in Bolivia and manages the office in La Paz. The CSRA office in La Paz is staffed by Bolivian citizens, almost of whom are from mestizo culture, although several can trace routes to indigenous ancestors. The staff is very stable, including Bolivian public health physicians and other health advisory staff. While the office is predominantly Bolivian, there is still a considerable amount of Anglo-Saxon influence in the La Paz office, as the founder, Mr. Robinson, and several key board members from the US and have a regular presence in the La Paz office.

CSRA first began implementing the census-based, impact-oriented (CBIO) approach in Carabuco in 1983. Since then, the organization has come to serve over 75,000 people, and the CBIO approach has been extremely successful in the altiplano and other regions of Bolivia. Current data show that child mortality for CBIO areas is reduced by half in comparison with similar areas without the program.^{49,50}

CBIO is a long-term, multi-step process deriving its strength from extensive community involvement and frequent evaluation and re-evaluation to address community concerns (see table 2, next page). A lengthy pilot program precedes any full-scale effort, and the pilot may last more than two years. It requires active participation from local residents, including their evaluation of health concerns, and development of a statistical database to document those concerns. When the full-scale program begins, it is constantly renewed by community re-diagnosis of their problems and priorities.

Table 2:
Table of Events: Timeline in Census-Based, Impact-Oriented Approach⁵¹

Before the Pilot:

1. Recruit, train field staff.
2. Invite communities to participate
3. Develop working relationships with communities.
4. Establish logistic support
5. Design, test, and redesign methods to obtain community members' views on health priorities
6. Design, test and redesign suitable data forms for field use and statistical analysis
7. Design, test, redesign program delivery strategies for likely priority problems
8. Carry out preventive and curative services on trial basis
9. Analyze the information and apply results to the development of the pilot program

Pilot:

1. Identify every community resident
2. Determine the community views on health priorities
3. Record the occurrence and cause of disease and death
4. Record all births and deaths
5. Arrive at agreement on most serious and frequent treatable problems in the community
6. Design specific activities to address such problems
7. Agree on time span for pilot program such as one year, after which the definitive program state will begin

Implementation: Community Diagnosis: (6-12 months)

1. Establish and maintain relationship of trust with gradually expanding number of communities in the program area.
2. "Define" each community in terms of its major issues and potential cures
3. Determine the most frequent and serious readily preventable or treatable causes of sickness, disability, death, and those at greatest risk
4. Determine health priorities of community members
5. Establish program priorities based on local epidemiology and community priorities

Program Planning: (3 months)

1. Determine resources available for program implementation
2. Develop program work plan based on priorities and available resources

Implementation: (approx. 3-5 years)

Evaluation and Community Re-diagnosis: (3 months)

Planning for next program phase: (3-6 months)

Trained auxiliary nurses from the communities themselves provide the cornerstone of CBIO work. Local residents undergo a training program, run by the CSRA, to become “auxiliares,” the Spanish term for auxiliary nurse. These persons do not have official nursing training, but learn to recognize signs and symptoms of acute illness, learn communication and data collection skills, and learn to educate people about the most concerning health problems in their area. A substantial portion of their job entails visiting every house, registering people into a database and interviewing residents. These home visits continue at least annually for every household, and more frequently for homes with young children, pregnant women, women of childbearing age, or sick adults (see table 3). In this way, those at the most vulnerable stages of life receive the most outreach, health attention and monitoring.

Table 3: CBIO Schedule of Home Visits by Auxiliary Nurses

Homes w/ children <2yrs:.....	Every two months
Homes w/ children 2-5yrs:.....	Every four months
Homes w/ women aged 15-49 without young children:...	Every 6 months
All other households:	Once/year, or more frequently if residents are sick

In addition to registration of vital events, auxiliary nurses use the visits to answer health questions, provide education and information, and give vaccinations or acute medicines when needed. Home visits also provide a constant and regular system of contact with all residents, including those in remote areas and those families who would not usually use community health services. Additionally, when residents die, the auxiliary nurses conduct verbal autopsies to help discern the cause of death and the course of illness leading up to death.

The auxiliares work effectively with the community members because they are from the same culture – often the same towns – and speak the same language as the local people, whereas trained registered nurses and doctors who work at the main clinic are almost exclusively from mestizo culture and speak only Spanish. In Carabuco, the auxiliary nurses' linguistic and cultural match is critical because the local residents speak primarily Aymaran and have their own beliefs about health which often differ from western medicine.

The CBIO approach also provides baseline data that can be used to monitor changes in the health statistics of the area. This surmounts the pervasive problem of lack of documentation which is common among many developing countries. The CBIO areas provide vital statistics which would not otherwise be available in the region.

Payment for these services is provided largely by the CSRA program costs, with money from outside donors. Some type of payment for acute services is encouraged on a graduated scale. Often, non-monetary payments are accepted at the clinic from persons wanting to offer food or other payment in kind in return for health care services.

Structure, weaknesses and strengths of the CBIO program:

In 1986, after working three years in the region, CSRA build the main health clinic in Carabuco. (“Clinic” in this paper refers to this main health clinic, a level one primary health center.) This clinic is CSRA’s organization and service delivery center in the 27- community area. Over the next several years, a total of 11 health posts, or “puestos,” were constructed in larger villages throughout the region so that people would not have to travel more than two hours by foot to reach them. The main center in the

village of Carabuco functions as a primary care hospital, equipped with two inpatient beds, simple birthing facilities, a microscope, a small laboratory, a pharmacy and a dental office. The locally based health posts, or puestos, are a home base for the auxiliares, a place to gather and store health statistics, and a resource for health information and basic treatments such as oral rehydration therapy and some antibiotics. The posts are equipped with very few utility services, none are heated and very few have electricity or running water. There is no phone in the entire region of Carabuco. Posts and clinic communicate with one another and with the central office in La Paz by short wave radio.

Of the original 11 puestos, only eight are still functioning because there are fewer auxiliary staff. At the program inception, 15 auxiliary nurses were working for CSRA, but the Consejo has cut that number to nine in order to reduce costs to improve the long-term financial viability of the program. They hope to be able to run the program within the operating costs of the national health system to provide an affordable model system for private and national development projects.

Most auxiliares work out of the health posts. The central clinic in Carabuco provides a workspace for two doctors – one employed by CSRA and the other a recent graduate doing a year of obligatory service with the Ministry of Health (MOH). One “licenciada,” a MOH graduate nurse (who has professional nursing training and certification), one dentist, and one pharmacist, two administrators and one driver are employed full time.

The CSRA staff and the MOH staff often work in the same facilities, and ideally, their work should be complementary, but often the two groups have different program goals to meet. For example, because of international support for the childhood

immunization project, there is a national push from the Bolivian government to meet child vaccination goals. MOH employees are monitored regularly regarding their vaccination rates, and employees feel pressured to focus on this goal to the exclusion of other health concerns. Depending on staffing, CSRA-defined goals can be neglected as well, with staff providing vaccinations and immunizations instead of addressing community needs such as training about oral rehydration therapy or classes about the recognition of respiratory infections.

In addition to the problems created by program goals that differ between CSRA and the Ministry of Health, there are also some problems created by the limited continuity of the MOH staff. Since most MOH physicians come to the area for their post-graduate year of obligatory service, it is difficult for them to develop any lasting relationships with the local government or with the patient population. These relationships can be difficult to form for any outsider, because cultural differences between the Aymarans and the mestizos can take a long time to bridge, but when physicians change on a yearly basis, it is very difficult to create lasting bridges between the local Aymarans and health professionals.

Despite some challenges in program implementation and in “bridge-building,” the CBIO approach has yielded tremendous results in all of its regional sites. The overall probability of child death (for children under 5) differs by 49% when comparing CBIO areas to areas without the program.(see page 31)⁵² In fact, this difference is probably greater than calculated, because new health programs were being implemented in the comparison areas at the same time that comparison data was being collected, so there may have already been improvement over baseline.

Given that better health outcomes are the primary reason for implementing this program, CSRA's improvement of mortality rates is evidence of its primary success. But other benefits to the CBIO approach must also be considered. These include:⁵³

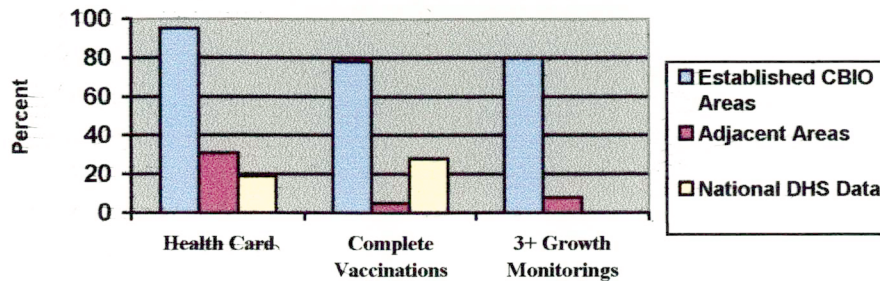
1. **Affordability:** ARHC/CSRA calculates that it spends approximately US \$9 per person to implement the CBIO program in a community. When compared to the total health care expenditure per person in the poorest countries, US\$14, and Bolivia's expenditure of \$34 per capita, including \$10 per person from the government alone, this program is affordable and well worth the investment.⁵⁴
2. **Data collection:** The approach provides readily available birth, mortality and morbidity data that otherwise would not exist. This provides an epidemiological documentation of health problems in the area, and the basis for monitoring and assessing changes in morbidity and mortality.
3. **Outreach and prevention:** The CBIO method focuses on the entire community, reaching every resident, not just those who normally seek healthcare services. This prevents those people who live near health centers from disproportionate use of health resources and services. Facility-based primary care is often plagued by one of two problems. Either the center is overwhelmed with acute care needs and lacks time and personnel necessary to emphasize prevention, or the facility becomes severely underutilized and resources go wasted. Neither of these situations maximizes health benefit. By contrast, the CBIO outreach aggressively targets care to those in greatest need, regardless of their location or natural tendency toward service utilization.
4. **Bridging barriers:** Because it is outreach based, CBIO identifies those at greatest risk, those who would not seek health services on their own. The mandatory home visits build trust and help to bridge geographical, informational, socioeconomic, and cultural barriers.
5. **Community specificity:** Morbidity and mortality data specific to each community, along with community self-evaluation and participation in program decisions, gives rise to an intervention structure that responds to each community's biggest concerns. Program resources are used in a way that reflects local priorities.
6. **Staff involvement and pride:** Staff, both local and from outside the community, are highly involved in program decisions and develop great personal pride about their accomplishments.

Since 1985 when CSRA/ARHC began an official census of the Carabuco region, health prevention programs and acute services have been expanding each year, and this has been reflected in dramatic improvements in most health indicators. Programs provide immunizations for childhood diseases and tetanus shots for women of childbearing age, vitamin A supplements for children under six and post-partum women, education programs about prevention, early recognition, and treatment of diarrheal diseases and acute respiratory infections and childhood malnutrition. Health promotion efforts have included encouraging more pre-natal visits, increasing the number of women giving birth in the presence of a trained attendant, and offering more training to the traditional “parteras” or “women who attend births.” Auxiliary nurses have also increased family planning education and services, particularly in the last five years, and encouraged exclusive breastfeeding until at least six months of age.

In addition to their door to door education services, the doctors and nurses together provide school health services such as dental screenings and school health education programs in all of the local primary schools. They also take advantage of community gatherings on Saturdays and have provided health fairs in most of the village centers in the Carabuco region in conjunction with market day, when nearly every family from the village sends at least one family member to the village center.

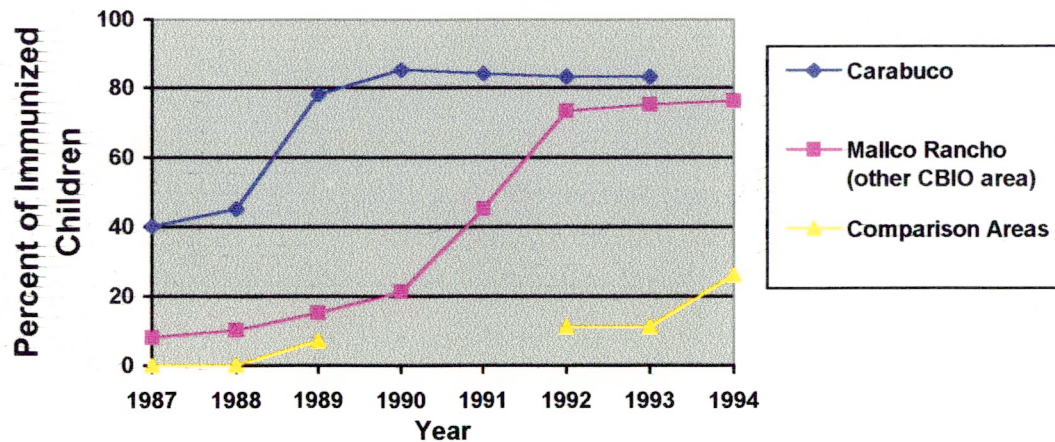
These many outreach efforts have yielded excellent results in health prevention indicators. The following graphs are examples of the large difference in service provision and health indicators in CBIO versus comparison areas.⁵⁵ Figure 8 shows the enormous difference in health care monitoring and preventive services between CBIO

Figure 8: Coverage of Child Health Services in CBIO areas versus Comparison Areas



and comparison areas. The next graph, figure 9, shows the increased numbers of children who are fully immunized in the CBIO areas.

Figure 9: Percentage of 12-23 month old children in established CBIO and comparison areas who are fully immunized, 1983-1994⁵⁶



Data comparing the child and infant mortality rates for CBIO areas with similar, non-program areas and with national data demonstrates the positive outcomes of the CBIO program (Table 4). Note the dramatic differences in mortality for both infants and children (in red) between the sites.

Table 4: Mortality impact assessment for three areas, 1990-1993⁵⁷

Age Group	Established CBIO program areas	Children in Ancoraimes and Sipe-Sipe*	Comparable children in DHS** survey
0-11 months	75	117	116
12-23 months	19	58	N/A
24-59 months	4	11	N/A
12-59 months	7	22	16

* Ancoraimes and Sipe Sipe are demographically similar comparison areas adjacent to Carabuco.

** DHS = demographic health survey

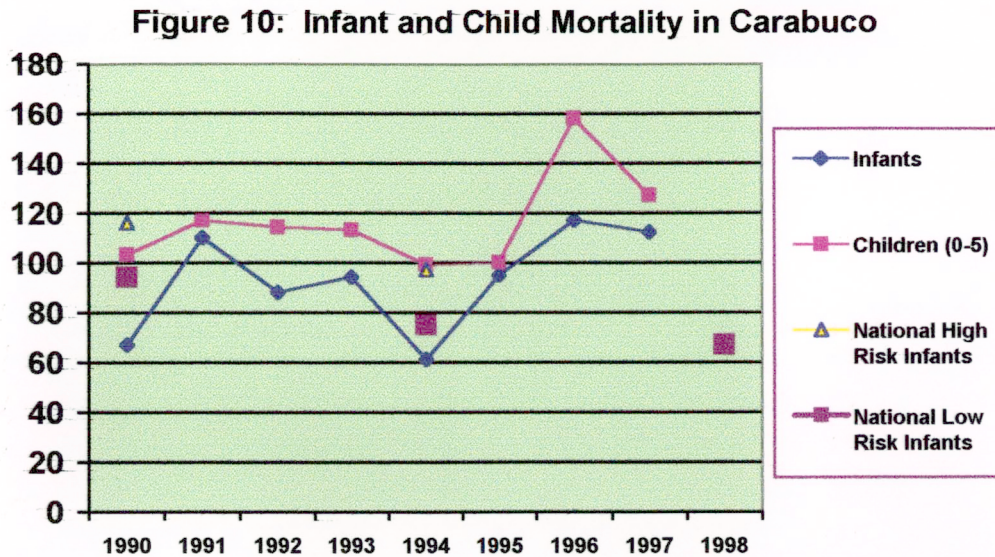
Child survival in CBIO areas is markedly better than in either comparison group. The risk of childhood death (0-59 months) is 35% less in CBIO areas compared to national data for high-risk areas. Demographically similar comparison areas had a 49% higher risk of child death than the CBIO group.⁵⁸

Relative Effectiveness of CBIO Approach in Different Communities:

Despite the markedly positive health changes in all CBIO communities, an interesting dichotomy has developed between the altiplano sites and the newer lowland projects. While altiplano programs have been underway four to six years longer than the lowland programs, the newer programs are achieving greater successes. An analysis by Shanklin in 1998 clearly demonstrated that there were greater reductions in infant and child mortality in these newer service areas than in the more established programs.

In the first few years of program implementation, 1992-1995, the lowland areas underwent a 74% reduction in infant mortality rate, dropping from 68 deaths to 18. In comparison, Carabuco's IMR has wavered between 61 and 117, decreasing in the early 1990s, and then increasing since 1995 to levels once again surpassing the national

average for high risk populations. This rate decreased again after 1996, but remained above the national rate. (Figure 10⁵⁹)



In addition to the jump in infant mortality, other health indicators have also shown little improvement. The number of women using trained birth attendants in Carabuco was only 22% compared with an average of 75% in the lowland communities.⁶⁰ Only 40% of women had been to one pre-natal visit in Carabuco, compared to 87% in the lowlands.⁶¹ Data from 1993-1997 suggest that some educational programs have had not had the desired impact in Carabuco either. For example, more mothers know how to prepare oral rehydration therapy for the treatment of diarrhea, but state that they do not know when to use it. Despite more familiarity with ORT preparation, there has been a decrease in its actual use. After several years of education programs, only one fifth of mothers knew the symptoms and danger signs of dehydration in children.⁶²

The evidence is irrefutably clear that the program has dramatically improved preventive health for infants and children in the lowland communities. So why have the programs in the highlands, which have been in existence for a longer time fallen short of their lowland counterparts? Shanklin suggests that there is a strong difference in utilization of services between the high plains and lowland sites, and concludes that where services are offered and utilized, the rewards are great.⁶³ In Carabuco and Ancoraimes, under-utilization has been a major problem. Illiteracy and cultural differences both contribute to this trend. Illiteracy – rampant in the altiplano communities, affecting 46% of all adults⁶⁴ – is not so prevalent in the lowlands. Additionally, the lowland indigenous people are Quechuan, not Aymaran, and the differences in cultural beliefs may drastically impact utilization patterns in both communities. An analysis of the Quechuan culture is beyond the scope of this paper, but the Aymaran culture and system of beliefs will be explored in depth below.

Aymaran Culture, Aymaran Spirit:

According to Aymaran legend, as stated earlier, Viracocha, the Sun God, created the Aymaran people from objects on the shores of the great Lake Titicaca, at the same time that he made the sun. Each different group of people came from a different part of the land. In fact, while modern science creates a healthy skepticism about the timing of this "creation," there is no clear historical evidence about where the Aymaran people may have come from, or a people from whom they may have descended. In addition, there is no migratory legend to explain their arrival on the altiplano.⁶⁵

Spanish influence has left a permanent mark on the Aymaran culture since the Spanish invaded the Inca Empire in Bolivia in 1532.⁶⁶ Now many practice an Aymaran interpretation of Catholicism along with their traditional beliefs. God is seen in some



Figure 11: Aymaran woman buying fruit in the city.

semblance to both the Sun and to Viracocha, the Sun God; Pachamamma, or Earth Mother, has become integrated in some ways with the Virgin Mary, and saints are linked to mountain spirits.

The characteristic dress of the Aymaran women has become the hallmark of Bolivian culture over the years. Ironically the style was not traditionally Aymaran in origin, but evolved from decrees imposed upon them by the Spanish king in the 18th century. The characteristic parting of their hair in the center with two long braids on either side, topped with a dark bowler

hat, was the result of a decree by the Viceroy Toledo. Punishment was imposed on anyone not following suit. The customary dress combines bright woven wools, native to the indigenous people, with multi-layered long skirts similar to what was fashionable in Spain in the 1800s. It consists of "pollera" skirts, with multiple colored horizontal bands and stripes over several thick petticoats, and short woolen jacket topped with a woolen shawl. Aymaran women are hardly ever without an ahuayo – a colorful, hand-woven rectangle of cloth tied in the front, worn over the shoulders, used for carrying all sorts of cargo, from children to bushels of chunos, or dried potatoes (see figure 11,⁶⁷ previous page).⁶⁸

While their appearance has been guided by Spanish rule, and their belief systems altered by the Christian missionaries, the Aymaran lifestyle, system of governance, and traditional belief structure exist in similar form to that found hundreds of years ago. Homes made of mud bricks with straw enforcement and thatch roofing, are similar to those of Inca times (Figure 12)⁶⁹.



Figure 12: Aymaran mud-brick home in Carabuco.

Lifestyles are also similar, with families living together in one or two rooms, sleeping on llama pelts on low earth platforms with their cooking utensils and pots kept in niches in

the walls. Most people are subsistence farmers, raising potatoes which they freeze dry into chunos for long-term storage, or quinoa, a protein rich grain used to make flour and thicken stews. Quinoa is the only edible plant that contains all essential amino acids in the same proportions as milk. It is a critical source of nutrition in the harsh climate of the altiplano.

Agriculture, community government, and even family life differ radically from traditional western civilizations. Community participation, egalitarianism, and shared work form the foundation for every relationship, from the political structure of villages to childhood responsibilities within families. Community leadership is based on a rotating schedule in which every married man takes his turn as the head of the community. Although his wife is not a leader in name, she has an active role in carrying out the responsibilities of this position as do the ten rotating "under-secretaries" whose role varies depending on community. In contrast to formal democratic governments, where leadership positions are seen in a powerful light, they are not positions of status for the Aymara. Instead, this role is seen as a responsibility and a service, as the leader must make all major decisions about education, electricity, hospitality, social services, training courses, water supply, agricultural needs, health and local conflicts. Major decisions are put before the whole community in a monthly village meeting before the leader or leaders come to a conclusion.

From an early age, children are taught the interdependence of families by learning the interdependence of his or her own family members. Children are each given tasks to aid in family survival – collecting wood, retrieving water, and guarding the animals. Whereas western culture encourages independence, Aymaran culture fosters community

responsibility and reliance on one another. Children first learn responsibility for their families, and later for the whole village.

Intra-family reliance becomes inter-family reliance when young couples have their own children and become an independent community unit. Marriage (or committed partnership, as many couples are not officially married) in the Aymaran community signifies much more than the responsibility to participate in community leadership. In fact, the Aymarans do not consider someone a person until they become married. The word in Aymaran for "to marry" is "jaqichasi-a" or, to become a person. Personhood and marriage signify opening one's sphere of reciprocity – acquiring a more valued state of being by giving oneself to the whole community, as symbolized by giving to one's spouse and spouse's family. The marriage ceremony involves a series of gift giving between the families, establishing this reciprocity in an active way, as the couple will do with all other families in the community during their marriage.

Village life is so strongly founded on principles of community that a man who had to go away, to war or for family reasons, would come home to find that his neighbors had sowed and harvested all of his crops. Sick people, widows and orphans are communally cared for, and everyone takes his or her turn with this care. These structures reflect the fundamental Aymaran values of egalitarianism, reducing greed and jealousy between people and assuring that all are provided for. According to Harold Osborne,⁷⁰ who studied the Aymarans in the 1950s, theft was so unheard of in the area when the Spaniards arrived that when the Spanish colonials began shutting their doors against thieves, the native people assumed the Spanish feared physical harm.

Envy is very rare among the Aymarans because no one accumulates money, knowledge, or products without sharing it with other community members. People are valued for their personal accomplishments in serving others. They are trained to always give back their knowledge or ability for the benefit of the total community, rather than striving for their own personal or professional achievement.

Aymaran Agriculture and spirituality:

It is important to understand how spiritual beliefs impact life and farming on the altiplano, because their role is as influential as the egalitarian community structure. Agriculture is the mainstay of Aymaran life. Religion has a firm basis in the natural world, with prime references to Pachamamma – the Earth Mother, supervisor of all growing things, the mountain spirits, and the Sun God, Viracocha. The rules that govern agriculture are based in faith – by reading the periods of the moon and seeing signs in nature to guide the harvesting or planting of crops. Much of this “guidance” comes from divine inspiration, often from a spiritual leader called a yatiri. In modern days, guidance in health and matters of the body also comes from these holy people.

In early Aymaran tradition, a yatiri was a diviner for the common folk, a spiritual guide. The yatiri studied moon phases, interpreted dreams, read the signs of nature and listened for divine inspiration, all of which helped him guide the timing for agricultural events and rituals. Rituals were as important to agricultural success as physical work; life was mainly agriculture, agriculture was inseparable from matters of the spirit, spiritual matters and ritual guided life.

It is interesting to note that it was the spiritual guides who evolved into what are today identified as “traditional healers.” Many Bolivian health workers associate this title

with knowledge of herbal medicines or physical ailments, but in fact, the yatiri's historical position as a person who reads the spiritual signs gives a better clue as to the training and vocational orientation of these healers. They work with the body on a spiritual level, often not approaching health problems from a physiological perspective at all. And because the Aymarans have a rich spiritual, affective understanding of the body and its organs and very little physiological knowledge, it makes sense that they would choose a yatiri, the spiritual guide, to be their traditional healer.

Aymaran concepts of the body, health, pregnancy, delivery and illness:

The Aymaran concept of organs has more to do with affective significance than physiological function. For example, one organ may give rise to ethical ideas, another to courage, another to calmness. Very often, the people do not know technical names for body parts, including reproductive organs, and only rarely have an understanding of their function or physiology. For example, the concept of amniotic fluid does exist for the Aymarans, but it is most commonly thought that a baby floats freely in blood within the mother's womb.⁷¹

When a woman is pregnant, it is believed that she should work hard until she is full term, because staying seated too long will allow the baby to grow too much and will make labor difficult. Sitting in the sun is also discouraged because too much sun can make the placenta stick to the mother's back and therefore lengthen the time necessary for the placenta to come out. Swelling in pregnancy is understood to be caused by cravings of the mother, because she does not want to eat regular food while pregnant. Bleeding during pregnancy is seen as a danger sign and a signal of possible miscarriage, but women often have difficulty leaving their responsibilities with families, crops and

animals to go to a clinic or health post to be evaluated. Because of the massive migration, houses are often left empty or women are left alone with children and crops to tend. One woman reportedly bled for two weeks without seeking help, continuing to work hard in the fields. She miscarried the baby. (Reluctance to seek western medical care is an important issue among the Aymara, and will be addressed later.)

Associations of “hot” versus “cold” health processes influence the Aymaran understanding of almost every infirmity. States of being healthy and sick, as well as their cures, are associated with one or the other. Women consider childbirth a type of sickness because they know they run the risk of dying with each delivery. Childbirth is understood to be a cold process. Women are wrapped in many blankets, pig fat is rubbed on their shoulders and back, and hot herbal teas are given to keep them “hot” and thereby prevent the cold from “forming the baby and blood into a ball,” and causing difficult labor. While such beliefs are largely based in folkloric understanding, it is interesting to note their importance in the real physical environment on the altiplano, where temperatures are nearly always below freezing at night and people live in non-insulated, unheated houses which offer little protection from extreme cold.

In Aymaran understanding, sickness enters the body in a more fluid way than the modern medical model. Illness may enter through intact skin just as easily as through any orifice. Any overt opening in the skin makes the body even more vulnerable, and therefore injections are seen as dangerous, causing another port through which the “cold” can enter. This is considered especially true in childbirth when the body “opens.” Indigenous Aymarans believe that the body enters into an “open” state after delivery. Every opening, from the post-partum womb to all the pores of the skin, is seen as

dangerous because of the risk of letting the “cold” penetrate the mother. Injections during and after childbirth can cause a great deal of anxiety as women already feel extremely vulnerable to many sources of cold. Feeling that they will not be kept “warm” enough, and that no effort will be made to ward off the cold, is one of many reasons why Aymaran women do not use the clinics for childbirth.

Twice they gave me a shot that made me feel very cold. Where they put the injection, well, there was the place where the cold could enter. Now that affects me. I regret having gone. It wasn’t necessary to go to the doctor, in vain one gives money.⁷²

They fear losing other traditions as well. Aymaran women and indigenous birth assistants give hot teas made of coca leaves called mates (pronounced maa-tay), and broths of certain herbal plants. The woman’s spouse is usually present – many times he is the only attendant in remote areas – and holds the woman’s head to prevent her spirit from decreasing or being taken by bad spirits. Attendants massage the abdomen and hands and feet, helping to keep her “warm.” They also say special prayers to call the Gods to protect the pregnant woman as she labors and delivers.

After birthing, the mother's body is seen as dis-articulated, de-structured, almost mashed up. Even the hands are as if separated in parts. This is controlled with rubbing, which is understood to put parts back together. In addition to massage, this condition is treated with soup made of whole parts – whole potatoes, a whole lamb's head – nothing cut up. Like many Aymaran treatments, this “whole” soup works by analogy. It helps guide the body toward its reconstruction into wholeness by containing nothing fragmented itself.

Problems of birth are often attributed to poor positioning of the baby, and massaging the abdomen is used to help with repositioning. If that fails to work, the

partera (the birth assistant) “puts alcohol in her mouth and sucks on the toes of the birthing woman, which is seen to assist in repositioning the baby. A rabbit broth is also given to the mother. This, like many Aymaran treatments, is seen to work by analogy; rabbits give birth easily, so drinking their broth will impart that ability to the laboring woman. Placental retention is sometimes attributed to too much sun, but also understood as a volitional movement of the placenta which wants to climb back inside the mother, as the baby would want to “crawl back inside” the mother. The placenta has its own “life” very connected to the life of the baby, so much that even if the mother dies, the placenta must come out and be properly cleansed and buried.

In a normal birth, the umbilical cord is never cut until the placenta is delivered. The Aymarans do not use knives to cut the cord because knives are seen as instruments of harm. Instead they cut with glass or pieces of clay ceramics. Afterward, the mother is washed with rosemary water, which has some disinfectant properties. The placenta, intimately associated with the child’s spirit, is carefully washed and boiled, and buried with coca leaves and llama fat in the yard with the placentas of all previous children.

Treatment of the cord and the placenta is undertaken with great care because the placenta is intimately connected to the newborn’s spirit. In this attention to the child’s spirit, the single greatest philosophical difference between the western understanding of childbirth and the Aymaran one becomes visible: For the Aymarans, childbirth is seen primarily as a spiritual event, not a biological one. Extreme care is taken to observe all rituals and practices which will affect the moral health of the baby in both the spiritual and ethical dimension. The body of the baby supports the spirit of the baby. They are not as worried about cleanliness of cord cutting and are more concerned about the

damage they may do to the spirit by using the wrong method. For the Aymara, protecting the spirit protects health in a direct way, for one of the most common causes of death in their communities is, in their words, "ajayo," or, in Spanish, "perdida de su espiritu," that is, loss of spirit. USAID also offers the translation "evil spirit."⁷³ Guarding the spirit is equivalent with guarding physical life.

Post-partum treatment is oriented toward making sure that blood clots and placental parts do not stay inside the birthing mother. She is given herbal drinks, some of which come from plants that are known scientifically for their anti-inflammatory properties. Plants help "clean the blood, the clots and all the membranes that can stay in the uterus and cause infections."⁷⁴ In general, a period of rest is recommended after giving birth. This period can be anywhere from one week to one month, depending on the demands of work and harvesting season. During this time, the woman stays in the kitchen where she gave birth, not looking at the sun or touching any water. This perhaps prevents women from being exposed to extremes of heat or cold as they heal. Not adhering to this period of rest is seen to cause arthritis, rheumatological problems and other sickness later in life. Older women commonly attribute their ailments later in life to not having had the proper rest after delivery.

Verbal Autopsies, analysis of Aymaran health behaviors:

The descriptions of childbirth practices above have been used as an example of how Aymaran philosophy and practices differ from western medicine. Both yatiris and local families also use traditional practices to help cure their sick at home. These include inhaling smoke or ground peppers, drinking hot mates, massaging with alcohol, washing

with urine, bathing in fresh water to reduce fever, rubbing with egg whites to cleanse the body, drinking herbal remedies, bathing in kerosene to reduce fever and to draw out the illness, and most commonly, calling the spirits to guard the patient.⁷⁵ While many traditional treatments may help, or at least do no harm, 6% of these practices are viewed by western medicine as dangerous. such as giving pepper inhalants to people with pneumonia. Not all families seek assistance when their children are ill, but those who do almost always seek out a yatiri. For most people, auxiliary nurses and doctors are used as a last resort, when home remedies and other techniques have failed. To explore utilization of services for severe illnesses, verbal autopsies on children who had died over the last eight years were examined.

Since CSRA has been working in Carabuco, auxiliary nurses have been trained to conduct a verbal autopsy of all child deaths. This involves interviewing a close family member of the deceased within three months of that person's death. The purpose of such interviews is to assess the family's thoughts about cause of death, and then to gather enough history of illness to discern the most likely medical cause of death. A prenatal history is also ascertained, as is an estimate of how highly the child was valued by family members.

Family members are asked to explain the child's cause of death in their own words, to explain any treatment which was given, and to estimate the length of the child's illness. They also answer detailed questions about the child's symptoms in the days preceding the illness and the details of the child's birth.

A sample of 60 verbal autopsies was analyzed out of approximately 150 child deaths in Carabuco in the last eight years. Only 7 of 60 of these families, just over 10%,

had sought the attention of an auxiliary nurse or a doctor before the child died. All of these children had been sick for at least three days, although the history given in the verbal autopsy was insufficient to determine the point during the illness at which families sought medical attention. Several stories indicate that the western medical care came later in the course of sickness. For example, one child was sick for five days with diarrhea and vomiting and was finally brought to the health post one day before his death. There was not a specific type of illness which was more likely to receive western type medical treatment. Children were seen for shortness of breath, bloody diarrhea, vomiting, fever, and cough, but there were many children with the same symptoms who received no medical treatment.

In 22 of the cases, over one third, the family did not seek any treatment for the dying child. Of these 22 children, 10 had a very short course of illness, estimated to be less than one day by the parents. Two of these cases were very sudden and could be considered accidents – a three-year-old who ate rat poison, another three-year-old who choked on a toy. Several of the children who were ill less than one day had problems associated with birth injury or gestational illness. While the true length of illness is difficult to discern from parents' histories, it is clear that children who were sick less than one day were less likely to receive any treatment; home remedies, yatiri care, or medical evaluation, than children whose course of illness lasted several days. Children who were ill at birth were usually not treated at all, although some were given home remedies.

Thirty-eight of the 60 families did utilize some form of treatment for their children, either home remedies, yatiri care, western medical care, or some combination thereof. Seven sought out an auxiliary nurse or doctor, 14 specifically mentioned calling

upon a yatiri to give herbs or to “call the spirit,” and the remainder gave their own home remedies. The herbal treatments and other practices given at home are often similar to those offered by the yatiri. These include rubbing with herbs or egg whites to decrease fever and draw out the sickness, placing chest compresses, bathing in herb water or kerosene, giving the children special mates (teas) of coca, anise, eucalyptus, and drinking special oils. The use of an eggwhite rub was noted by four families in the group who had not sought western medical help. That compares to two families who used oral rehydration therapy in the same group.

While multiple causes of death were listed, including vomiting, diarrhea, shortness of breath, problems in pregnancy, alcohol use by parents, fever, pneumonia, walking in a cemetery, passing under the sun, and poor breast feeding, the symptom of “ajayo,” or “loss of spirit” was mentioned nearly twice as often as any other cause of death. “Ajayo” has been explained in several ways. One auxiliary nurse described it as the spirit slowly leaving the person. Another said it was like the spirit “sinking down.” One of the autopsies explained that a bird had taken the spirit. “Ajayo” can be understood as loss of life force, loss of the will to live, or loss of the essence of life within one’s body. It is commonly translated into Spanish as “perdido su espiritu,” or lost his/her spirit. Ajayo is a condition that can affect anyone of any age, sometimes by itself and sometimes in conjunction with other physical symptoms.

The most common treatment for ajayo is to “call [the patient’s] spirit.” People pray in this way over their sick loved ones at home as a way of healing them, and very commonly take them to see the yatiri who possesses a particular gift for “calling” or “raising” the spirit. Indeed this is in keeping with the Aymaran understanding of health

as intimately connected with the spiritual being. Without a physiological understanding of illness, it makes sense that their way of healing the root cause of the infirmity is through spirit, not biology. They first seek to heal the spirit, then use herbs and other remedies to treat physical symptoms. While the herbal remedies which are used often have medicinal characteristics and can often reduce symptoms, they are not always directed at stopping a biological cause of illness.

The most common symptoms which yatiris treat and families name as probable precursors to death are indeed very dangerous ones: fever, vomiting, diarrhea, cessation of breastfeeding, shortness of breath. And indeed the CSRA auxiliary nurses have been trained to educate parents about the danger levels of such symptoms, and to seek treatment when their children exhibit them. By listing these and other symptoms as causing death, parents indicate that they recognize them as serious, yet many do not seek treatment. Almost all sick newborns and many sick children go without treatment by trained health staff.

What is the significance of ill-appearing newborns not receiving medical or yatiri care? In a society where nearly 10% of infants die before they reach one year of age, it is likely that families prepare themselves for the possibility of one or more of their children not surviving childhood. With lower expectations about child survival, they may be less inclined to seek any type of treatment – traditional or western. Since care has only recently been made available in these areas, families have not had a chance to learn that the western medical approach can increase survival, and their expectations for child survival have not shifted.

Anthropologist Jacqueline Michaux, who has lived with the Aymara for three years learning about their beliefs and culture, explained in a cultural education seminar for auxiliary nurses⁷⁶ that the Aymaran women react very differently to the death of an infant or child than mestizo women. Where it is common, and almost expected, for the mestizo woman to experience great grief and possibly depression for several months, and to carry that traumatic experience with her for life, the Aymaran women, out of necessity, continue with their lives much more quickly. First, the demands of their subsistence lifestyle require constant attention, and it is not culturally acceptable to break down in grief at the death of a child. Secondly, their culture creates a different sort of bonding – a more community centered responsibility for the child – and this allows a more widespread community sense of loss as well. Just as people share the burdens of survival, they share the burdens of death. The fact that Aymarans do not consider a child a person until he or she reaches adulthood and is married may be related, at least in part, to their decreased likelihood of reaching adulthood.

Despite a probable lower cultural expectation of survival and limited knowledge about medical care, parents are still desirous of health and survival for their children. Nearly two thirds of children from the verbal autopsies had been treated in some way before their death. Thirty-five out of the 44 kids who had been sick longer than one day (80%) received some type of treatment. Six of these 35 children had sought western medical treatment. Most of those who died quickly had not received care, but those who had been ill for more than one day had received some form of treatment.

Several families in the verbal autopsies specifically stated that they would not agree to western medical treatment. One family's father refused any suggestions of the

trained health team. Another family's mother resisted the referral, and called the spirits instead. Another stated "no doctor," but used instead egg whites and a fresh water bath to reduce fever.

Yatiris, in contrast to western providers, were consulted often. What do the yatiris provide that the physicians and nurses do not? Is there more to this than the cultural familiarity of traditional health providers? In reading the accounts of people's experiences with the doctors, the answer clearly lies in matters of the spirit. The doctors, most of whom are fulfilling a year of obligatory service and are unfamiliar with Aymaran beliefs, work solely within a physiologic model. The yatiris, on the other hand, treat the spirit first. For a people who do not understand the scientific model of disease, who attribute almost all matters of life, death, and growth to the spirit, the yatiris work with what is most vital to them and to their understanding of health. The physicians, in comparison, are completely inattentive to the spiritual aspect of life and health which is so fundamental to their patients.

Researchers have suggested that much more education is necessary about physiology and the scientific model of disease in order to increase Aymaran understanding, and thereby increase their use of trained health providers. People do need a structured education in basic anatomy and physiology, and some understanding of the "biological" models of disease causation. But the pattern of health seeking behavior in these verbal autopsies indicates that the Aymaran people want to address spiritual concerns in their approach to health care. Since their primary understanding of disease comes from a spiritual perspective, the western medical model by itself will not suffice as an explanation for disease or the provision of treatment.

Given this need to address the physiological with the spiritual, it would seem sensible for the CSRA to develop partnerships with the yatiris. This could support medical personnel working with the yatiris to offer treatments. The development of a collaborative effort could assure patients that their desire to “call the spirit” would be adequately met. The establishment of a collaborative treatment system might also help community people to develop some trust of the medical approach. In order to establish such a collaboration, mestizo physicians and auxiliary nurses would need to learn some of the spiritual practices of the Aymaran people. Collaboration with yatiris could help them to tailor their treatments so they would be less of an affront to the Aymaran health beliefs. Yatiri involvement in medical care could provide the reassurance and cultural familiarity necessary for people to begin to trust western medical treatment. (Potential difficulties of this collaboration will be addressed in the last section.) This is not the only approach, but clearly some incorporation of the spiritual aspect of care, and a better understanding of cultural beliefs around health care, are essential to the Aymarans becoming comfortable using the western medical system.

Aymaran Attitudes toward Western Medicine:

In addition to the lack of a spiritual approach to treatment, there are multiple other reasons why Aymarans are reluctant to use western care providers. Many reasons have been described above – the people have important beliefs about the way certain health issues, childbirth being one example, should be handled, and they are afraid that if they use a health center, these practices will not be permitted or these belief systems will not be respected.

In addition to these problems, the Aymarans have a different concept of who a “physician” should be. To the Aymarans, calling someone “doctor” or “yatiri” is a reflection of an internal disposition – a vocation or capacity for the field. It is this internal disposition that enables the Aymaran to know the sicknesses of his culture. “We understand it as something in our hearts,” explained one man.⁷⁷ Sometimes a physical sign signals this predisposition. A child born with a cleft lip, or six fingers, for example, is thought to hold this special gift – such birthmarks are seen as a mark of divine selection.

In Aymaran understanding,

...mestizo MD's want nothing more than money, they don't listen, don't do anything, don't give you medicines. They only understand illnesses of the city. If we ask them about our sicknesses, they don't know. 'What is that?' they say. ...They're only in it for the profits.⁷⁸

Indeed the Aymarans believe that there are separate Aymaran and mestizo maladies. Lacking a universal concept of physiology and causation, they believe that each culture gets different sicknesses according to their different bodies and different origins. The difference in health belief systems between the indigenous people and the mestizo caregivers could easily be misunderstood by the Aymarans as a lack of knowledge about

local illnesses. If a person dies from what they understand to be “ajayo,” or “lack of spirit” and a doctor calls that “respiratory arrest” or “dehydration” without making reference to the spirit, the two parties could easily misunderstand one another.

It is not just differences in belief systems which prevent full utilization of the clinic and health posts. While communities may vary, and subtleties of variation may not be apparent from a questionnaire, the most commonly stated reasons not to seek emergency care at the post were:

- (1) Lack of time
- (2) Distance from the post
- (3) Belief that the auxiliares will not be at the post⁷⁹

During the harvest season in particular, Aymarans are working constantly with their crops. They find it difficult to spare time for information at a home visit, let alone to walk to a health center. This time crunch becomes more pronounced the greater the distance to the posts. Every family in CSRA/ARHC districts lives within a two-hour walk of a health post, and less than four hours

from a clinic. This is substantially better accessibility than most non-CSRA areas, but even with relatively good access, a visit to the puesto and back can consume more than half the day, and then there is the question of staff availability. People do not trust the



Figure 13: Aymaran woman walking to town.

posts to be open – at any given time the auxiliary health worker could be away on a home visit or working with professionals at the main clinic. When people are fearful that the health professional they seek may not be available, it is easy to see why they are reluctant to invest time to get there.

Another factor exacerbating this lack of trust is that traveling auxiliary nurses, and even the ambulances, do not always carry medicines and curative supplies. When auxiliaries are unable to help with acute problems in the field, an opportunity to develop trust is missed. Aymarans report that being unable to seek help in the field decreases their trust in the health workers and reduces the likelihood of their seeking western medical services for prevention or emergency.⁸⁰

Even with dramatic improvements in health care outcomes in the past ten to fifteen years, due largely to NGO involvement, community members feel distrustful about the organizations in their areas. The NGOs are criticized for not following through on their word, for coming and going, and for saying one thing and doing another.⁸¹ People feel that the organizations have substantial resources – money, offices, transportation, services – and these benefits rarely reach the local people. Indeed, in a society where resources are equally distributed and where all members have community responsibilities, it is easy to imagine people feeling angry about an organization with a relative abundance of resources. These fundamental issues color other difficulties between the health development organizations and the local people.

Difficulties faced by health professionals working on the Altiplano:^{82*}

Cultural differences in value systems and in health practices often create a chasm of misunderstanding between health workers and the communities. While the Aymarans fear losing some of their traditional health practices by participating in the clinic-based care, some health workers feel they are unable to uphold their health values when working with the Aymarans. Health workers reported in interviews that the Aymarans lack basic hygiene habits and knowledge regarding anatomy and physiology. Some feel they lack maternal sentiments and concern for children's health stating that it seems children possess a worth "less than that of livestock." Others criticize the way they use medicinal plants, noting that yatiris often know which herb to use, but are not concerned with using the correct dose. They also express frustration that the Aymarans think biological realities have non-biologic causes.

Perceptions of time can be a source of tension between health provider and the Aymarans. The providers become frustrated that the Aymarans are not available for their housecalls, yet come to the main clinic at all hours for non-emergencies. Indigenous farmers come whenever their work is finished, not when the clinic is open. As described in the previous section, the Aymaran use of yatiris to treat very sick people can frustrate health workers as well. Ill people are commonly taken first to a yatiri to treat their "ajayo." Often they are so gravely ill by the time they reach a puesto or the main health center that the staff can no longer help.

Providers often judge the Aymaran health practices and traditions without understanding their purpose goal of each practice. Mutual lack of understanding causes

* The following descriptions come from comments not only within the Carabuco area, but from the larger

numerous problems. Health workers have been known to describe the Aymaran practices as “bien feo” translated: distasteful, ugly. Workers can become impatient with traditional practices, imploring campesinos to use cleaner or more medically-oriented practices without explaining how western practices may help prevent illness.

The Aymarans’ lack of understanding about medicines and treatments also causes strife. For example, a woman taking birth control pills (unusual in the altiplano) developed a cough while on the pills. She discontinued her pills, associating cough with the medication. Then the rest of the community heard this story and now will not take the pill for fear of developing a cough. This type of misunderstanding is exacerbated by limited time for education in home visits. Aymarans have little time for home visits, and health workers have to meet many goals in that limited time. This makes it difficult for the worker to assess appropriate learning issues for each family and to teach according to their specific needs.

Conclusion:

Bolivia has a politically and socially difficult history which has contributed to poor health care for many decades. The rural population in places such as Carabuco has been most affected. Multiple factors contribute to the state of health on the altiplano: low socio-economic status, low literacy, high birthrate, poor access to water, sanitation, limited education, and time-intensive agricultural cultivation.

While these socio-economic factors have persisted throughout CSRA's involvement in Carabuco, there have been dramatic improvements in morbidity and mortality as the program has developed. One example is the reduction of childhood deaths by 50% at a time when there was no change in the nearby comparison areas. CSRA is an innovative, collaborative program which has put tremendous work into community outreach and interaction, hiring local people and working creatively to make collaborative community planning strategies with local residents.

Yet some of the profound differences between mestizo culture and Aymaran culture remain to be addressed in this integrated approach. These factors stem primarily from differing fundamental approaches to health care: the western scientific model and the indigenous spiritual perspective. There are many aspects of these profound differences which could be addressed through education programs. CSRA sponsors many such projects, promoting health care through school health education programs, community health fairs, and door to door education.

A wealth of basic knowledge does need to be conveyed in this manner. Sex education is one clear example where this is true. It is often difficult to discuss sex and reproduction when people do not know the basic organs and their functions. Doctors'

and nurses' explanations are not helpful if the local people do not understand the basic functions of the organ systems or diseases.

In addition to gaps in education, the people lack a basic element of trust for the health providers which creates overall skepticism about the medical model. Health providers often exhibit this same lack of trust with respect to their patients. Lack of understanding and respect is the route cause.

One approach to improving this problem is through reciprocal teaching, i.e., putting the health providers in the student role. The multiple gaps in understanding which have been discussed above cannot be effectively addressed by educating the Aymaran people alone. This must be coupled with a concomitant effort to increase the mestizo understanding of the Aymaran belief system. This analysis suggests that the critical foundation of this cross-cultural learning would be a better understanding of Aymaran spirituality and thereby a better understanding of their approach to health, illness, and death. With an improved cultural knowledge base, there are many ways that cultural differences could be addressed in the current health care system in order to improve trust and increase community utilization of services.

There are many challenges to be confronted en route to establishing this type of partnership in education. First, the development of this type of reciprocity, will take a long time. The CSRA has been working in this area for 17 years, usually in close communication with many community members, and as of yet do not have working relationships with the yatiris, who could be a prime source of knowledge for the health care team. Whether this is due to a limited effort on the part of the western providers, or

a reluctance on the part of the traditional healers was not clear from this research, but the yatiris have little incentive to work at this type of relationship.

First, the yatiri goals in health care have a spiritual foundation, not a physiological one. With limited physiological understanding themselves, and limited trust of the western providers and the western approach to health, the yatiris have little reason to want to interact with clinic staff. Without their own incentive, a key relationship between western and traditional health provider may lead the way into some sharing of knowledge, but this research did not reveal that such a relationship yet exists. The creation of such a connection remains difficult in an environment where the physicians and some of the administration rotate on an annual or bi-annual basis. The CSRA-employed physician had been there for three years at the time of this study, and she may be in a position to begin to bridge some of those gaps. It also may be appropriate for one of the auxiliary nurses, who are likely to be in the area for a longer period of time, to try to establish that connection.

Still, the education efforts would need to be repeated yearly for the new MOH physician and any new staff, and it may be very difficult to sustain yatiri energy in a project where their subjects are constantly leaving. If yatiri interest could be obtained, it would be worth investigating the pros and cons of employing them in some role at the centers, both for educational purposes of the staff and for provision of their own traditional services within the clinic or puesto setting.

Once the two groups were able to get together, however, the question of language still remains a problem, as the language of all interactions at the central health clinic is Spanish, and there is no guarantee that the yatiris are bilingual. It would be impossible to

educate mestizo physicians and nurses in Aymaran, but may remain difficult to communicate with yatiris in Spanish.

While the yatiris could be a key resource for the CSRA if it were possible to access them, it may prove more practical, and more productive, to uncover the knowledge of the auxiliary nurses already employed at the center. This accessible resource has knowledge of the communities and their beliefs, and a command of both the Spanish and Aymaran languages. Some of these people could be a tremendous source of untapped knowledge for the CSRA who already employs them.

CSRA has undoubtedly used these people as resources in their many pilot studies and constant re-evaluations already, and there are many reasons why the auxiliary nurses may not be able to provide all of the cultural information and instruction that would be necessary in staff training. First, although many of the auxiliares are from the villages in which they work, it was clear in a training for auxiliary health staff that a majority of them are more at home with mestizo traditions than with indigenous Aymaran practices.⁸³ Many had a difficult time believing several aspects of Aymaran culture which were presented to them at a teaching seminar. Second, it may be difficult to facilitate critical employee feedback about their employer's approach to a project. Particularly if there are only a select few auxiliary nurses who hold true to the Aymaran belief system, it would be difficult for them to speak out in a group where they were still the cultural minority, and in which many Aymaran traditions are looked down upon by co-workers.

If some of these problems could be addressed, basic intercultural training seminars could lead to some very practical results. For example, a mutual understanding needs to be reached about the health professional's desire to reduce the infection rate with

“Clean Birth” packets and sterile razor blades, and the Aymaran need to cut umbilical cords with something other than a knife. Aymarans do not understand the concept of microorganisms, and therefore do not understand the risk of infection and the need for handwashing. Health workers, in turn, do not understand the spiritually based practice of not cutting a cord with a knife. Perhaps a compromise honoring both traditions could be reached, such as boiling a sharp piece of clay or glass in rosemary water. This herbal water is already used during the birth process as a wash for the mother, and would be accessible in almost all households. In this way sterile procedure would be possible without breaking indigenous traditions.

It would be simple for the physicians and nurses to alter their practices as well, in order to accommodate Aymaran beliefs into their treatment systems. Covering women in labor with lots of blankets, and welcoming families into the rooms to massage, rub, and pray with the expectant mother could make clinic births more acceptable. Incorporating concern for “ajayo” when patients seek medical care might help patients feel that their needs are being better met. An ultimate goal would be to establish a working relationship with the yatiris so that they could practice their healing in conjunction with the caregivers at the puestos or the clinics. Creating a bridging relationship between the two types of healers would provide the groundwork for rapidly increasing understanding by both sides, and could help foster a sense of trust between community and caregivers.

The strengthening of local bridges between community members and health care providers will mirror the recent financial bridges created by the federal government. Until recently, national politics played negatively into health care. Since last year, with the passing of the Law of Popular Participation and the stipulation that 20% of the GNP

will be divided among local communities, the poorest of communities like Carabuco have much greater municipal income than ever before. It is possible that the increased resources for education, agriculture, roads and health care will make it more feasible for families to stay in the area. It may also give health care providers more flexibility to focus on local initiatives.

Need for Future Study:

The suggestions made here call for a better understanding of intercultural and educational attempts that have been tried successfully or unsuccessfully in the past, and what has been learned from those attempts. A deeper look into past efforts may help discern the best approach to intercultural education. The following are several goals for future study:

1. **Yatiris:** Identify of the yatiris in each community and assess their attitudes regarding CSRA and the western health care approach. Inquire about their past experiences with western providers. Learn about their traditional understanding of disease process and their physiological knowledge base. Ask them to discuss some of the difficulties they have, or any strengths they may see within western care and the puestos or clinics. Learn how yatiris are reimbursed for their services and consider how those reimbursement methods may be applied within the western system. Identify individuals within the western health care system with whom each yatiri may be able to work one-to-one.
2. **Auxiliary Nurses:** Assess what the auxiliary nurses know about Aymaran health beliefs. Identify key persons who may have more of a knowledge base and may be able to collaborate with one another to provide a workshop for other auxiliary nurses, physicians and other providers. Identify auxiliares who already have working relationships with yatiris who may be able to act as bridge persons between the different cultural approaches.
3. **Science with Tradition:** Investigate further ways in which practical scientific goals, such as sterile birth procedures, antibiotic administration, oral rehydration therapy, can be serviced within the traditional belief system. How

can traditional practices be tapped to more effectively treat medical conditions?

4. **Service Provision:** Investigate ways to improve auxiliary service provision in the field. How can carrying sacs be stocked so that they have the most useful array of treatments for the least carrying weight when they are in the field? How can they best distribute these services and offer education about the illness at the same time?
5. **Timing:** Is there a way to organize home visits and time in the puestos so that there could be two or three afternoons a week when the auxiliary nurse could reliably be found at the health post? Are early mornings the best time to be conducting home visits? How might home visits to each community be consolidated in order to eliminate the auxiliary nurses traveling time?
6. **Payment Structure:** Find out in what ways people pay the clinic for their services, noting differences between MOH payments and CSRA payments. Compare this with what is discovered about how people reimburse the yatoris. What is the most culturally appropriate way to help foster a sense of accountability for health care services without resorting to the western model of fee-for-service? Are there ways in which the reciprocal nature of service payments in the traditional culture can be recreated between the clinic/ puesto and the community?

This further investigation and eventual implementation will require the kind of intensive commitment that CSRA has exhibited in Carabuco since the early 1980s. The organization's stable commitment to the area and well developed community involvement will provide a strong foundation for deepening those ties and strengthening each groups' understanding of the other.

It can be concluded from this study large cultural differences can create many gaps between program providers and participants despite a solid organizational structure and intensive community involvement. The development of better education about each parties respective health beliefs, and more collaboration in health care delivery between western and traditional providers, will result in effective health care for the whole community.

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